Chen, Philip S. 2001 A

Dr. Philip Chen Oral History 2001 A

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This is the first interview in a series on the career of Dr. Philip Chen. It was conducted on February 15, 2001, in his office on the first floor of Building 1, National Institutes of Health, Bethesda, Maryland. The Interviewer is Dr. Buhm Soon Park.

Chen: This is Philip Chen, and I was born July 3, 1932, in St. John's, Michigan. My father was an orphan, or at least his parents died when he was very young, and he was brought up by his grandparents in Nonchung [sp.], China, which is a small town near Shanghai, at that time. Maybe now it's probably a Greater Shanghai city. But I guess his grandfather felt that learning English was a very important talent that would help him in his future, so my father was sent to a mission school nearby, which was operated by the Seventh Day Adventist Church, and he turned out to be a very bright student and did well. So around, in 1925, at the age of 22, he came to the United States to pursue a college education, and he majored in chemistry at a college in Michigan called The Emmanuel Missionary College, graduated in 1929, and then he went on to Michigan State College in East Lansing to work on a Ph.D. in organic chemistry.

My mother grew up in a rather well-to-do family in Beijing, China, and her father was a tax collector and traditional Chinese physician to the emperor, as I understand it. They lived near Tianenmen Square, and so her family was rather well-to-do. She was one of 12 children, of whom six survived to adulthood. She was the youngest. And through the influence of, I think, mission groups, she was also sponsored to come to the United States to work on her college degree, although she had already been a teacher of Chinese in China. And she came in 1931 to the Michigan State College also, to work on her college degree, and that's where my parents met, at Michigan State College.

And they were married, I think, in 1931, shortly after she came, and I was born in 1932. So I'm the oldest of six children, four boys and two girls.

My father went, in 1933, to Madison College in Madison, Tennessee, near Nashville. It's a college that no longer exists, but it was a small, self-supporting college, and many of the students worked their way through to get a college education. I think there were a number of Asian students there, as well as others. And for five years my father worked and taught at that small college, and that's where I first went to school. I guess my parents took me to grammar school there, to visit, at the age of five, and the teacher said, "Well, he seems to like the school. Why don't you let him stay."

So in 1938, we moved to South Lancaster, Massachusetts, where my father was going to become a faculty member of another small college called Atlantic Union College. It's a denominational college affiliated with the Seventh Day Adventist Church. He actually stayed there for essentially his entire career. But I was then six years old and I went into the second grade, did fairly well in school. I was a good student and I managed to skip for some of the grade because I was much smaller than the other kids in the class and they used to tease me, so the teacher decided to move me out of that room to a higher grade rather than staying in the same grade. So I started high school when I was 12, in a high school affiliated with Atlantic Union College. It was called South Lancaster Academy, in South Lancaster, Massachusetts.

I'd always been interested in science because my dad was a chemistry teacher and he did a lot of interesting experiments that allowed us to learn from him.

Park: Did you have kind of a small lab at home or a kind of kitchen-like...

Chen: Not too much. Most of the things I might have done in his school lab because I took science in high school, but I built model airplanes at home, did various other things with my hands, and a few experiments, but mainly it was in school.

Park: Was your _____ teaching was strong in your family at the time?

Chen: Yeah. I think the tradition was, we had a strong Chinese cultural overlay on things, and the reverence for elders, the respect for the family, and, of course, they treated their children with great honor, and they were always--family, to them, was very important because here we were, a Chinese family, in New England, small New England town, and really didn't have the social contact with other Asian families.

Park: Did you speak Chinese at home?

Chen: My parents spoke some Chinese. Since my father came from Shanghai, he originally spoke a different dialect. My mother taught Mandarin, but she taught him Mandarin so they could communicate in Chinese. I picked up some Chinese from their spoken conversation and then, at the age of about nine or 10, my mother tried to teach me more Chinese through elementary books, but I learned some and it didn't really stick with me, so I'm not very good at Chinese today.

Park: And in terms of religious practices, were you a Christian?

Chen: Yeah. They were very devout Seventh Day Adventist Christians. The college was a Seventh Day Adventist college. My mother was not, of course, when she came to the United States. My father had been brought up, since he was a child, through the Seventh Day Adventist school in China, through the college he went to, and then he taught at Seventh Day Adventist colleges, so that was a strong influence.

Park: And in your high school, were there many other Chinese students, or you _____?

Chen: No. There were very few, very few. It was mainly a New England student population. They were drawn from many states in New England, though, and then some from other states. But since it was a church-affiliated school, it brought students from distant areas. So it was quite a diverse population in some respects. There were relatively few individuals from overseas and from distant parts of the United States, but there were such people there. So I was exposed to diversity in students and faculty.

Park: Did you feel any difficulties in terms of cultural differences?

Chen: Some, but not a huge amount. That is, we were different. People regarded us as being somewhat unique, although they also were quite interested that there was this Chinese family there. Of course, my father had a Ph.D., so he was respected as a teacher, an academic. Many of the faculty at the college did not have doctorates. And it was a very small school and barely survived, I might say.

Park: How was the scientific education there? Was it very strong or just a...

Chen: Well, I think the teachers were pretty good, but... This is in high school. South Lancaster Academy, it was called. I think we learned pretty well from the teachers, but it was textbook learning. They were not academically, you know, academic researchers or anything like that. It was a high school level of education. But I think the teachers were quite dedicated, and I think I got a good high school level education.

Actually, I decided after about, as I was entering my third year of high school, that if I took a few extra courses, I could finish and go to college the next year, so I decided not to spend four years in high school but complete three years and then go on to college. So I actually never received a high school diploma. I never graduated from high school, but I completed enough courses to go on to college.

And I decided to go to the same college that my father had gone to, which was in Michigan. It was called Emmanuel Missionary College. Today its name is Andrew University. But they had a stronger science program there, plus they were able to accept me as a freshman without my having a high school diploma. So I went there in 1947, at the age of 15, but I only stayed one year. I majored in physics. I took general chemistry. I guess I actually didn't take physics that first year, but I had a nominal major of physics. And my mother felt I was really too young to go away from home, so she wanted me closer to home.

So I came back in 1948 and I went to Clark University, which is in Worcester, Massachusetts. It's about 15 miles from where I lived, and I could commute. And they had a stronger science program there than the school where my father taught. In fact, at one time they had a very good physics department. Robert Congdon [sp.] was the head of physics, the father of rocketry, and Albert Michaelson [sp.] was in the physics department at one time. He won the Nobel Prize for measuring the speed of light. My professor there was Percy Roop [sp.]. He was the chairman of physics at the time. We had a small number of physics majors, but...

Park: Do you remember the textbooks you used in physics and chemistry?

Chen: Well, no. It would be difficult to remember them. I know in modern physics, we used a textbook by Lapp [sp.] and Andrews, but I don't recall the general physics or general chemistry texts.

Park: Linus Pauling's book?

Chen: No, we didn't use that. I had heard him lecture, though. My father used to go into Boston to hear the American Chemical Society lectures, and he would sometimes take me, so I was able to listen to quite a few well-known chemists lecture at places like MIT.

I took actually as much or more chemistry at Clark University than I did physics. But, again, I did rather well in college, and I decided I would try to finish in three years, that is, by going two and a half years to Clark, finish college.

While I was in my third year, a man from Rochester, the University of Rochester, named Harold Hodge [sp.], who is head of pharmacology, had come, recruiting graduate students, because pharmacology was not a well-known discipline. And to get graduate students in his department, he would make a speaking tour of various colleges in New England and the Midwest, so he would go to places like Golden and Amherst, Clark. He'd go to colleges in Ohio. And he happened to come to Clark University, gave a talk, and I was actually not present at the talk. But a few days later I was talking to a friend of mine, who said, "Hey, this fellow Harold Hodge [sp.], is looking for graduate students. Why don't you contact him." At the time I was applying to various graduate schools in chemistry and physics. I applied to Berkeley and Michigan and _____ other schools, and I was actually accepted by some of them. One of them was to go to the chemistry department at Berkeley, but Rochester seemed kind of intriguing. It was closer--it was only about 350 miles from where I lived--and they offered to pay my way out for an interview, so I took the train to Rochester, interviewed at the pharmacology group there. And they offered a fairly interesting financial system, which is that one would work half-time for the Atomic Energy Project, which had a contract with the university, and then you could go to graduate school. So I decided to go to Rochester and get a Ph.D. in pharmacology, which I actually didn't know much about at the time.

So in the summer of 1950, I finished my college degree by taking two courses at Harvard summer school. I took physical chemistry and zoology, and this was my first introduction to the biology area, because I'd been taking physics and chemistry, but not biology. I took zoology at Harvard University summer school. So in September 1950, I started graduate school at the University of Rochester. It was part of the School of Medicine and Dentistry, and pharmacology offered the Ph.D. I'm not sure it was actually a formal department at that time, but there was a department called radiation biology, and over the years the department names have changed. It became radiation biology and biophysics, and then biophysics, and now even that has been dissolved. I think it's part of biochemistry today.

So I was assigned to work in a section that dealt with bone research, calcium and bone, bone mineral research, that was headed by a man named Dr. William F. Newman. Newman was a bright, young up-and-coming researcher at Rochester. He'd been there during the war, working on the Atomic Energy Project, which was part of the Manhattan Project supported by, initially by the Army and then later by the Atomic Energy Commission, and they did most of the biological studies, the pharmacology and toxicology of elements of interest to the atomic energy program, like uranium, plutonium, radium, all the--beryllium, things that went into the atomic energy effort. And it was interesting that the Atomic Energy Commission gave them pretty free rein to do the kinds of research they wanted to do, and they did fundamental biochemistry, cell biology, on the effects of these elements that were, in general, toxic. Dr. Hodge, who was head of the group, had been one of the co-authors of *Pharmacology and Toxicology of Uranium and Plutonium*, I think, and my boss, Bill Newman, studied hydroxy appetite, the calcium phosphate-containing mineral of which bone is composed and where these elements deposit when they get into the body, so he was able to do some very good, fundamental biochemistry and became well known as the bone mineral specialist.

Park: How many students did he have at the time in his section?

Chen: Well, I think in Newman's group, there may have been five or six. In the pharmacology total, there may have been 10 graduate students.

Park: I see. So it's a small section.

Chen: It's a relatively small college.

One of the people in the group was Taft Torobara [sp.], who was a Japanese American analytical chemist, and he was someone that I worked with closely on analytical methods. My main thesis was on the renal excretion of calcium by the dog, so it was more of a renal physiology project, but in working on the project, I worked on various analytical methods as well, and many of these were done in collaboration with Taft Torobara [sp.]. It turned out later that one of the papers we published is one of the most cited papers. It's the "Microdetermination of Phosphorus," and it was finally published in 1956, but the work on that was done, actually, after I finished my Ph.D. research.

So I worked for four years at Rochester, working on my Ph.D., helped teach the pharmacology course which was given to medical students while it was a course in the fall of each year, taken by second-year medical students.

The Atomic Energy Project also trained health physicists, and it sent workers or observers to the atomic bomb tests in Nevada, which at that time was held above ground. So I went in 1953 to the atomic bomb tests in Nevada, worked in a field laboratory, measuring the radioactivity of fallout and small-animal organs that they would trap in the desert to see what kind of radioactivity was coming down.

About the time I was finishing my thesis, we had a visitor from Copenhagen, Denmark, who was Professor Kaol Mueller [sp.]. He was the chairman of pharmacology at the University of Copenhagen, in the medical school there. And I was in the process of applying for various postdoctoral positions. One was to work with Scott Liveral [sp.], a friend of Dr. Newman's, but Dr. Mueller [sp.] said he'd be happy to host a postdoc if he could find support, and so I applied to--I was in the process of applying for a Guggenheim, for a National Research Council fellowship, National Science Foundation, different fellowships. I eventually got a National Science Foundation fellowship, postdoctoral fellowship, to go to Copenhagen, so I went there in the fall of 1954 and worked in the Pharmacology Institute at the University of Copenhagen.

Park: The fellowship was enough to support yourself?

Chen: Yeah, yeah. I think it was for like $3,400 a year, but I only had it for nine months, so I ended up getting about $2,500 for the nine months. But it was enough at that time because prices were very low for Americans.

So I got into a little bit of classical pharmacology there, worked on enzymatic methods, studied what happened to ATP, adenine nucleotides, in blood after it was taken from the body. I worked with a man named Serin Jurgenson [sp.], who later became--he was a physician who later became the chairman of anesthesiology at the medical school in Odensa [sp.], Denmark. But I also did some curious studies on the rabbit ear where we would perfuse solutions through blood vessels in the rabbit ear and measure contraction and relaxation of these blood vessels.

So, in 1955, I met my wife in Copenhagen and we were married in Copenhagen in 1955, and then I came back to the U.S. without any definite job. Professor Hodge asked me to come back to Rochester to sort of figure out what my next steps would be, and I knew that probably I would have to go into the military service because I'd been deferred during graduate school. The draft was very active back then. So in the fall of 1955, I started applying for different positions in the military, commissions in the Air Force and Army, Navy, and the Public Health Service. And it turned out that I was offered a position here in the National Heart Institute at NIH by one of the researchers that had been in the bone area, knew my mentor, William Newman. His name was Frederick Barter [sp.], who was a physician internist studying parathyroid hormone and calcium metabolism. So I guess that's how I got the contact, when my application much have crossed Dr. Barter's [sp.] desk.

I was also accepted into several other military programs, but it turned out that Barter's [sp.] offer was probably the most attractive. And the Draft Board actually had sent me a notice to report for induction the same week that I came to NIH. So on April 2nd of 1956, I joined the National Heart Institute as a commissioned officer in the Public Health Service.

By that time, Dr. Barter [sp.] had switched somewhat from an emphasis on parathyroid hormone, although he still worked on it, to working on aldosterol, the salt-retaining hormone that had recently been reported, and he was doing a lot of metabolic studies. They would measure everything that went into a patient and everything that came out. They could study sodium, potassium, other substances, the balance between intake and output. So this was a clinical group that I was in, and I was really the only Ph.D. biochemist type of researcher in that group.

It was a good experience to work with that group, but after about three years... I only had to serve two years to fulfill my military obligation. I actually stayed longer, and probably would have stayed longer except that they offered me a job back at Rochester to join the Department of Pharmacology, in Radiation Biology and Biophysics, which Dr. Newman's group offered me a job.

Now, back in those days, the Department of Radiation Biology and Biophysics was supported pretty much entirely by a contract with the Atomic Energy Commission, and so we didn't have to write grants. We got the money through the contract, and I guess Dr. Newman and others would prepare whatever documentation was necessary to get money for the whole group. So I went back in 1959 and I decided to concentrate on working on vitamin D, which is related to calcium metabolism, and it's something that I'd started to get interested in when I was still in Dr. Barter's [sp.] group.

I worked at Rochester for--I was there probably about seven years before I decided to take a sabbatical and go back to Copenhagen, and during this time I did a little bit of teaching, mostly research supported by contract, and I worked mainly on vitamin D as well as some analytical studies, methods for separating and determining these substances, and the effects of vitamin D and other similar sterols on calcium metabolism.

We had two children that were both born in Rochester, one just about the time I was going to NIH, and then a son after we got back to Rochester. He was born in 1959, which is the year I went back.

Park: So, when you came to NIH as a commissioned officer in the mid-'50s, how was your, what was your first impression at the time at NIH? Was it a very strong research institute at the time? It had a lot of reputation? Or it was just booming or just beginning to grow? Do you remember?

Chen: Well, I think NIH was beginning to develop a reputation. I didn't know much about it at the time I came, although I knew some people that had been here. In Dr. Barter's [sp.] group, there were many, many foreign scientists, because he was a well-known researcher and people came from Belgium, Mexico, Sweden, the United Kingdom.

Park: How did they come? As a visiting fellow or just a...

Chen: I don't--I think this predated the visiting-fellow program. I honestly don't know how each one was supported. I think Barter [sp.] supported some of them with some type of money that he had, and others came with their own fellowship. So they managed to come somehow. I really never knew about their visas or about their support. All I know is that they were there and they seemed to gain a lot from having been there. And then when they left, most of them became rather prominent researchers in their home country. One of them became head of medicine at Cambridge University in England; another one went to Belgium and he's a senior researcher there now. I saw him a few years ago. And then, from Mexico, unfortunately, was killed in an airplane accident _____.

But the NIH was attracting trainees from all over then. And, of course, Shannon, who was the director of NIH, was staffing up the Clinical Center, which didn't have--the NIH didn't have too many physicians initially. They needed young physicians to run the Clinical Center. So he was getting the bright young physicians from prominent universities to come as clinical associates.

In fact, some of them he hired even before the Clinical Center was opened, anticipating their need for them, and he would assign them to other places to get training before they came here. One of them was Dean Weingarten [sp.], who later became the director of NIH. He was assigned to work with Dr. Stetten in New York, so he worked in New York, then later came here. So, many of the young clinical associate physicians that became prominent researchers were trained here, and they were starting to populate the NIH. They were here from the time I got here. I saw many of them: Don Fredericks [sp.] and Robert Gordon [sp.].

Park: But did you work in the Clinical Center?

Chen: Yeah. My lab was in the Clinical Center, Building 10, so all these people were wandering in and out all the time, in the seminars and _____ meetings.

Park: You know, the Clinical Center was designed to facilitate the cooperation between basic science researchers and clinical type researchers, and did it really happen? You mentioned that kind of a discussion, but in practice, was there really a collaboration going back and forth between the patients' room and the laboratories?

Chen: Yeah, I think so. I mean, many of these young physicians, you know, didn't know much about research when they came, but they were in groups that had other associates in them. They may have had Ph.D.s. Or across the hall, there might have been a biochemical group. So there was a very good mix of basic researchers, Ph.D. types, and clinical trained physicians who then learned how to do basic research or clinical research. Some of the more senior people that were clinical also had Ph.D.s or had a basic science interest, so they were the academic medicine types. Dr. Stetten, for example, had an M.D., but he also had a Ph.D. and he probably regarded himself more as a biochemist than as a clinical person. He taught a course at Harvard Medical School that was very attractive because it gave medical students the real flavor of research. But he was said to be a very inspiring teacher. I never knew him as a classroom teacher, but, of course, I learned from him on a one-to-one basis.

So I think NIH was sort of just starting to really develop its reputation back when I first came. _____ on the upswing.

Park: Do you remember how many clinical researchers came a year, the size of the clinical associates versus other _____ researchers?

Chen: Well, there were several hundred a year, I think. They had a matching program back then, and they had a doctor draft, so they had lots of good applicants. And in the matching program, you know, it's sort of like a residency or internship _____. But they also probably had a few direct hire. Over the years, of course, it's gotten much more difficult to get good clinical associates, especially U.S. clinical associates, because there's more competition for these young physicians today. There's no doctor draft anymore, so they can go anywhere. And a lot of the academic centers who are populated with people that we train _____, they're not looking for their own _____.

Park: Do you know when doctors' drafts ended?

Chen: I'm not sure, probably in the early '70s. You'd have to check. The doctors' draft... The regular draft ended a little bit before the doctors' draft, I think. Now, I don't think that the regular draft brought in too many people like myself--some, but not a great _____ Ph.D., the draft dodgers.

Park: Comparing in the 1950s, when you came, talk about the 1960s next time before ending the session, I'd like to ask you about the comparison between the NIH research environment with the university research environment. Were there any great differences, or was it exactly the same or...

Chen: Well, one great difference is that we had no responsibilities other than doing research. At the universities, you tend to teach some, and it was rather difficult to get research support. I mean, I think when I first started in graduate school, there wasn't a big research-grants enterprise. The people got rather modest grants through applications. The NIH system was building up, you know, and then it became very common for people to try to get NIH grants, and they were rather easy to get back then because the NIH had plenty of money relative to the number of applications.

But in other respects, it was rather similar to a university in that it was certainly an academically oriented type of environment, the seminars, the one-on-one type of teaching, the mentoring type of education. So, for someone to move from academia to NIH or vice versa was not a huge cultural change.

And, for me, at the University of Rochester, it wasn't that much different except that I did more teaching up there, and since we were supported by a contract, I didn't have to apply for funds. Now, that's completely different today. There's no more Atomic Energy Commission, and everybody in that department, or what survived from that department, now have to survive on NIH grants, on the public grants. So it's a much more competitive system out in academia to get research support. This is a much more user-friendly type of environment for researchers that don't want to have to apply for support. If they do good work and they get good reviews through the Boards of Scientific Counselors of Reviews, they can continue for a very long time without being distracted by other activities.

Park: Well, thank you very much for today. Next time I'd like to start with the Board of Scientific Counselors for our reports and the review system and going on to the 1960s, when you finally came to NIH, and your career after that, and also your research in Rochester as well. And thank you very much for today.

Chen: Sure.

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